

Briefing paper

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Promoting Excellence in Health Economics

USING NATIONAL TARIFFS TO PAY FOR HOSPITAL CARE

Introduction

In 2003 the Department of Health in England introduced a new system of financing hospitals called 'Payment by Results' (PbR). PbR is a prospective pricing system that makes a direct link between hospital income and the number and case-mix of patients treated. Introduction of the policy was motivated by a desire to affect the efficiency (cost per patient treated), volume of activity and quality of care in English NHS hospitals. This paper presents the findings of the first extensive quantitative analysis of the effects of the policy in its first years of implementation on key outcomes and considers the implications for NHSScotland.

KEY MESSAGES

1. A cost per case based tariff system to pay hospitals has been introduced in England

- 2. This has led to reductions in unit costs of hospital care
- 3. There is some evidence that the new system has stimulated increases in the volume of activity without reduction in the quality of care
- 4. These positive results reflect the experience of casemix based financing in other health care systems
- 5. Scotland should consider whether there are ways of utilising HRG prices which would benefit the healthcare system



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Background

There is widespread evidence that the way that hospitals are paid effects their behaviour, that is what types of services they provide, how much and at what cost.

When considering the design and expected effect of different hospital payment systems, they can usefully be defined as having two dimensions. The first dimension is whether the price a hospital is paid is set prospectively or retrospectively. The second dimension is the extent to which the level of reimbursement is linked to the level of activity, i.e. whether hospitals are paid a fixed sum for a range of services or whether the funding is activity based.

When hospitals are reimbursed retrospectively for the costs that they incur, there is no incentive for the hospital to control costs or output. When payment to the hospital is by total budget set in advance of the services being provided, there is an incentive for providers to control total costs but there is no incentive to increase output. The sum paid will not increase with increases in activity. When the price paid per unit of activity is fixed in advance this provides an incentive for the hospital to control unit costs. If costs of an additional unit of activity are less than the price paid there is also an incentive for the hospital to provide more care.

Prior to PbR the two dominant purchasing arrangements in the English NHS and still used in Scotland were prospective block contracts based on local costs and sophisticated block contracts. The latter have a retrospective element as providers are able to negotiate for additional payment if their costs or output are higher than previously agreed. Relative to these arrangements, PbR removes the opportunity for hospitals to use their own cost circumstances to negotiate for higher payment. This feature of fixed price payment systems is usually linked with three key possible outcomes:

- 1. Increased unit cost control.
- 2. Reductions in the quality of care.
- 3. Increased volume of activity.

Objectives and Method

This study examined whether changes in key outcome variables measuring volume, cost and quality of care during 2004/05 and 2005/06 are associated with tariff funding introduced for NHS hospitals in England under PbR.

When evaluating the impact of a new policy like PbR, the challenge is to be able to determine whether changes in hospital behaviour are attributable to the change in policy. A valid method would be to compare outcomes in affected organisations with outcomes in a control group, not affected by the policy, as in a clinical trial or experiment. However, such experiments are rare in public policy.

In order to approximate the conditions of an experiment, we exploit the fact that, as shown in Table 1, PbR was introduced in stages. This provides opportunities for creating a control or counterfactual group using the later implementers of the policy and Scotland where the policy has not been adopted.

'Difference-in-differences' analysis is commonly used in the evaluation of impacts of policy. It depends on the assumption that, in the absence of the policy intervention, the unobserved differences between the two groups would be the same over time. We used this technique to estimate average changes in key variables in the treatment and control groups before and after the introduction of payment by results and hence to estimate the average effects of Payment by Results.

2004/05 2003/04 2005/06 English Scotland Scotland nFTs Scotland FTs **nFTs FTs Trusts** Most elective admissions Most non-Elective admissions

Table 1: The phasing in of PbR for hospital admissions, 2003/04 to 2005/06

 Table 2: Impact of Payment by Results on length of stay (days), proportion of day cases and growth in spells (change in percentage points)

Treatment group	Control group	Year	Length of stay	Day case proportion	Growth in spells
Foundation trusts	Non-foundation trusts	2004/05	0.02†	0.4†	-0.25
Foundation trusts	Scotland	2004/05	-0.08†	0.4†	1.33†
Non-foundation trusts‡	Scotland‡	2005/06	-0.03†	0.8†	2.57†

+Significant at P<0.01, ‡Elective only

Data

We used episode data from the Hospital Episode Statistics for 2002/03 to 2005/06 for England and from SMR01 and SMR02 data for Scotland. Episodes were converted to spells (continuous in patient stays and day cases) for the analysis.

We used length of stay and day cases as a proportion of elective admissions as our measures of unit costs for hospital admissions.

For quality of care we followed convention and employed in-hospital mortality, 30-day post surgical mortality and emergency readmission following treatment for hip fracture.

Results

Impact on unit costs

The results for unit costs are consistent across most of the DiD analyses. Unit costs have fallen more quickly where PbR was implemented in elective admissions,

- length of stay has fallen more quickly and
- the proportion of day cases has increased more quickly

This is what was expected from the policy.

Detailed results are presented in Table 2. The first column identifies the group of trusts to which PbR is being applied and the second column is the control group. The third column is the period over which the differences are measured. The last three columns contain the coefficients from the regression analysis. These coefficients show the difference in the change between the treatment and control group: the average effect of the PbR policy.

Impact on growth of spells

Only when using Scotland as the control group, did we see evidence of higher growth associated with PbR. See Table 2.

Impact on quality of care

We find little evidence of an association between the introduction of PbR and a change in the quality of care. (We have not presented these results in the table.) There are no results supporting the concern that quality of care has suffered as a result of PbR.

Discussion

Validity of results

We used standard proxies for quality of care in our analysis. Mortality has been criticised as insufficiently sensitive to change in the quality of care. However, in the absence of other routine data, such as quality of life outcomes measures, which may be more sensitive to changes in the quality of care, they are widely used. It is possible that there may be dimensions of quality of care that could have been adversely affected by PbR that we have not captured.

We have exploited the natural experiment that was created by the stepped introduction of PbR policy in England and the absence of PbR in Scotland. The DiD method controls for differences between the two countries which do not vary over time. However, if a policy that might influence the outcomes in which we were interested, other than PbR, changes in one country and not the other, this may bias our results.

These results echo those of observed for other health care systems utilising casemix based funding within a purchaser-provider structure.

Lessons for Scotland?

Hospital activity in Scotland is also categorised into HRGs and since 2005 some groups of HRGs (more precise) have been assigned fixed prices. These prices have applied to cross boundary flows of services between NHS Boards, albeit the tariff is no longer mandatory. However, the majority of hospital services are funded through block contracts. It does not necessarily follow that Scotland could benefit from widening the National Tariff system. Scotland has a vertically integrated system without commissioners and providers observed in many health care systems using casemix based prices. However countries, such as Finland, which have similarly vertically integrated health care systems, have successfully used casemix based pricing to fund hospitals. Scotland should consider what other ways there are to utilise HRGs in the funding of its hospitals and what the benefits might be.

Conclusion

Our analysis of the effects of PbR on key outcomes provides evidence that

- there have been reductions in unit costs of hospital care that are associated with the introduction on PbR in England in its early years of implementation
- these may have been achieved without detrimental impact on the quality of care.

The analysis suggests that, as with other casemix based hospital payment systems, PbR has achieved real changes in hospital health delivery in England. Scotland should consider whether there is a way that a cost per case financing system could be introduced within its current structure.

Research Team

Those interested in knowing more about this type of work, providing feedback, or in future collaborative work should contact Dr Shelley Farrar at the Health Economics Research Unit, University of Aberdeen, Polwarth Building, Foresterhill, Aberdeen, AB25 9ZD (Tel: 01224 553866; Fax 01224 550926; email s.farrar@abdn.ac.uk).

Anyone requiring further information about HERU should contact Anne Bews at the above address.

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For further details about HERU:

Please visit our website at http://www.abdn.ac.uk/heru

CONTACT US HEALTH ECONOMICS RESEARCH UNIT Institute of Applied Health Sciences, Polwarth Building, Foresterhill, Aberdeen AB25 2ZD Tel: +44 (0)1224 553480/553733 Fax: +44 (0)1224 550926 Email: heru@abdn.ac.uk www.abdn.ac.uk/heru